

---

**Epigenetic regulation of X-inactivation in human embryonic stem cells.**

**Journal:** Epigenetics

**Publication Year:** 2009

**Authors:** Tamar Dvash, Guoping Fan

**PubMed link:** 19106643

**Funding Grants:** Epigenetic gene regulation during the differentiation of human embryonic stem cells: Impact on neural repair, CIRM Type I Comprehensive Training Program

**Public Summary:**

**Scientific Abstract:**

X chromosome inactivation (XCI) allows dosage compensation of the expression from sex chromosome in mammalian female cells. Although this mechanism is extensively studied in the mouse model organism, the corresponding mechanism during human development is largely unknown. The generation of human embryonic stem cells (hESCs) provides an invaluable tool to address early embryogenesis in humans. Even though hESCs were supposed to shed light on the XCI process in early human embryogenesis, previous studies largely indicated inconsistency in the status of XCI in these cells. Recently, new data suggested that in vitro culture might affect epigenetic mechanisms such as XCI. In this review we will present the existing data regarding XCI variations in hESC as compared to data from the mouse embryo and embryonic stem cells. We will also suggest possible explanations for the conflicting observations in the literature regarding XCI in hESCs.

---

**Source URL:** <https://www.cirm.ca.gov/about-cirm/publications/epigenetic-regulation-x-inactivation-human-embryonic-stem-cells>